

### ***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing Amendment, claims 1-5, 7-14 and 17-23 are pending in the application, with claims 1, 22 and 23 being the independent claims. The disclosure and drawings were amended to overcome objections to the disclosure and drawings and to correct the disclosure editorially. Claims 6, 15 and 16 were cancelled and the subject matter thereof was incorporated into claim 1. Claims 22 and 23 were amended to incorporate features similar to the newly added subject matter of claim 1. Claim 17 was amended to overcome a claim rejection under 35 U.S.C. § 112, second paragraph, as being indefinite. No new matter is introduced by the current Amendment.

### ***Information Disclosure Statement***

An Information Disclosure Statement was filed on April 5, 2002. The Office Action states that "Some Low-Level Issues in the Implementation of a Shared Blackboard," Bosschere De Kom et al., January 1993, pages 88-95 (hereinafter "Kom") and "Flexibility in Blackboard System for Solving Dynamic Resource-Contained Scheduling Problems," J. Archibald, Online-Internet: <http://citeseer.nj.nec.com/cache/papers/cs/7055>, 1996 (hereinafter "Archibald") were not considered. However, contrary to such statement in the Office Action, the copy of the Information Disclosure Statement returned with the Office Action acknowledges the same references as having been considered by the Examiner; the Examiner's initials were placed next to the listed references on the returned copy. Despite the above noted discrepancy between the

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statement in the Office Action and the acknowledged and returned copy of the Information Disclosure Statement, Applicants respectfully submit that the indication in the returned copy of the Information Disclosure Statement that the Kom and Archibald references were considered by the Examiner is proper for the following reasons.

As to the Kom reference, the Office Action at page 3 stated that it was not considered because the copyright year on the bottom of the first page of the reference differs from the handwritten publication date on the top of the first page of the reference. However, there is no requirement that the copyright year and the publication year of a reference be the same in order to be considered by the Examiner. According to 37 CFR 1.98 (b)(5), a publication date is required. Since the publication year, namely January 1993, is clearly identified in the Kom reference, the reference should have been considered by the Examiner.

As to the Archibald reference, the Office Action at page 3 stated that it was not considered because the "month of publication (August) is missing." However, Applicants note that the Office Action itself identified the month of the publication, namely August. Since the nature of the informality is minor and inadvertent, Applicants respectfully submit that the reference should have been considered by the Examiner. A copy of the information disclosure statement providing the publication month of the Archibald reference is attached herewith, should the Examiner require a clean copy of the same.

For at least the above discussed reasons, Applicants respectfully submit that the indication in the returned copy of the Information Disclosure Statement filed on April 5, 2002 that the Kom and Archibald references were considered by the Examiner is proper. Thus, the

Examiner is requested to confirm such consideration in the next office communication.

***Objection to the Drawings***

In the Office Action at pages 3-4, drawings were objected to for including minor informalities. Figs. 1A, 1B and 3 were amended to incorporate the Examiner's suggestions except for the following points.

First, the numeric designation 104 is used twice in Fig. 3 in order to designate the physical belief-backboard 104 that stores rules and the belief model in the belief-backboard 104, which is formed from the rules. Since Fig. 3 is to illustrate both the structure (the blackboard 104) containing the belief model and a step of generating the belief model 104, Applicants respectfully submit that the two occurrences of the numeric designation 4 in Fig. 3 is proper. Thus, the objection should be withdrawn.

Second, the Bayesian Network 114 mentioned on page 22, line 4, of the specification is illustrated in the drawings since Figs. 1A and 1B, for example, disclose a belief network 114 and the specification discloses that Bayesian network is one of different kinds of belief networks. See specification at page 21, lines 19-21.

***Objection to the Specification***

In the Office Action at page 4, the specification was objected to for including minor informalities. The specification has been carefully amended to overcome the objection.

***Rejections under 35 U.S.C. § 112***

In the Office Action at page 5, claim 17 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 17 was amended to overcome the rejection and is submitted to be definite.

***Rejections under 35 U.S.C. § 102 & 103***

In the Office Action at pages 5-14, claims 1-6, 8-11, 14 and 18-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by "Dempster-Shafer Reasoning for Medical Image Recognition, IEEE Computer Society (U.S.), Volume-Conference 3, Los Alamitos, CA, November 1991, pages 480-487 to Lin et al. ("Lin"), and claims 7, 12, 13, 15-17, 22 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lin in view of U.S. Patent No. 5,418,888 to Alden ("Alden") and U.S. Patent No. 6,058,206 to Kortge ("Kortge"). The rejections are respectfully traversed.

Initially, it is noted that claims 6, 15 and 16 were cancelled and that the subject matter of these claims were incorporated into amended claim 1. Further, claims 22 and 23 were amended to incorporate features similar to the newly added subject matter of claim 1.

Claim 1, as amended, recites a system operative to recognize objects in content including, among other things, a belief model comprising a set of ***rules deduced from a learning system***. The learning system includes ***truth data files*** for deducing the set of beliefs, probabilities and shadow objects, ***a learning system controller*** and ***a statistics space*** controlled by the controller.

The set of rules describes how different classes recognized by the learning system are related to each other spatially and physically.

Applicants respectfully submit that Lin, Alden, and Kortge, applied individually or in combination *fail* to teach or fairly suggest a set of *rules deduced by a learning system*, where the learning system comprises *truth data files* for deducing a set of beliefs, probabilities and shadow objects, *a learning system controller and a statistics space* controlled by the controller, and the set of rules describes how different classes recognized by the learning system are related to each other *spatially and physically* for the following reasons.

First, Lin *fails* to teach or fairly suggest a set of *rules deduced by a learning system*, where the learning system comprises *truth data files* for deducing a set of beliefs, probabilities and shadow objects, *a learning system controller and a statistics space* controlled by the controller, and the set of rules describes how different classes recognized by the learning system are related to each other *spatially and physically*. Lin appears to disclose an expert system for medical image recognition whose reasoning module employs features of the Dempster-Shafer theory such as compatible frames and multivariate belief functions. See Lin at abstract. The Office Action at page 6 (the "Regarding claim 6" section) asserts that Lin teaches rules in a belief model, physically related classes, and spatially related classes.

However, in Lin, there is *no* teaching or fair suggestion of *rules deduced by a learning system*, where the learning system comprises *truth data files* for deducing the set of beliefs, probabilities and shadow objects, *a learning system controller and a statistics space* controlled by the controller, and the set of rules describes how different classes recognized by the learning

system are related to each other *spatially and physically*. For example, in page 483, section 4.1.3 (the "Spatial relationship" section), Lin discloses that a set of rules that characterizes the spatial relationships among these anatomical structures projected to horizontal plane is predefined. Applicants respectfully submit that the predefined rules of Lin *fail* to teach or fairly suggest the claimed set of *deduced rules by a learning system*, where the set of rules describes how different classes recognized by the learning system are related to each other spatially and physically.

Further, Lin *fails* to disclose how the predefined rules of Lin are produced. Thus, Applicants respectfully submit that Lin *fails* to disclose *a learning system for deducing rules*, where the learning system comprises *truth data files* for deducing a set of beliefs, probabilities and shadow objects, *a learning system controller and a statistics space* controlled by the controller.

Alden *fails* to overcome the above discussed deficiencies of Lin. Alden appears to disclose a system for relevance criteria management of actions and values in an RETE network. As to certainty factors of expert systems, Alden discloses that criteria statements can acquire certainty factors as a result of the combined certainty factors of objects referenced in them, and each statement in a set of criteria can be assigned a certainty factor threshold. See Alden at column 47, lines 3-7. However, Alden *fails* to teach or fairly suggest the claimed set of *deduced* rules, where the set of rules describes how different classes recognized by the learning system are related to each other spatially and physically. Further, Alden *fails* to teach or fairly suggest *a learning system for deducing rules*, where the learning system comprises *truth data files* for deducing a set of beliefs, probabilities and shadow objects, *a learning system controller and a*

*statistics space* controlled by the controller, and the set of rules describes how different classes recognized by the learning system are related to each other *spatially and physically*.

Kortge also *fails* to overcome the above discussed deficiencies of Lin. Kortge appears to disclose a pattern recognizer with an independent feature learning. In Kortge, an inference process is used where a distribution of network states come to mirror their respective probabilities, given the network's input data. See Kortge at column 13, lines 10-18. However, Kortge *fails* to disclose a set of *rules deduced by a learning system*, where the learning system comprises *truth data files* for deducing a set of beliefs, probabilities and shadow objects, *a learning system controller and a statistics space* controlled by the controller, and the set of rules describes how different classes recognized by the learning system are related to each other *spatially and physically*.

Second, it is improper to combine the references in hindsight using the Applicant's specification as a roadmap where there is no suggestion in the references to combine. Applicants submit that the system of Lin the disclosure of which is limited to analyzing known anatomical structures by using predefined rules. Such system of Lin is very different from the systems of Alden and Kortge, and thus, a person of ordinary skill in the art would not have found it obvious to combine them to arrive at the Applicants' claimed invention. Stated another way, it is submitted that the routineer looking at the applied references simply would not think to combine them in the manner suggested in the Examiner's without having the benefit of Applicants' disclosure. Therefore, any suggestion for making the combination appears to be based on Applicants' own disclosure, and such reliance is prohibited.

Third, the invention of Lin is disclosed to be limited to analyzing anatomical structures. On the contrary, claim 1 recites a plurality of experts, where the Applicant's invention may integrate any kind of expert available and may analyze any type of image. By being able to integrate any kind of available experts, various images that ranges from sporting events to tactical military footage and etc. can be analyzed according to the Applicants' invention.

For at least the above discussed reasons, Applicants respectfully submit that claim 1 is allowable over the combination of Lin, Alden, and Kortge. Claims 2-6, 8-11, 14 and 18-21 are dependent from claim 1 and are submitted to be allowable as being dependent from an allowable base claim.

Claims 12-13 are dependent from claim 1 and are submitted to be allowable for at least the same reasons discussed with respect to claim 1. Claim 12 further recites that relations subsystem is operable to determine temporal relations. Claim 13 specifically recites that the temporal relations comprise at least one of a before type, an after type and an exists with type. Applicants respectfully submit that the applied references *fail* to teach or fairly suggest the claimed temporal relations. The Office Action at page 9 (the "Regarding claims 12-13" section) asserts that Lin fails to explicitly teach determining temporal relations while Kortge teaches temporary storage in a weight updating code (the Office Action cites Kortge at column 14, lines 55-57). However, temporary storage of Kortge is *not* a determination of *temporal relations* as the word "*temporary*" refers to a short duration and the "*temporal relations*" refers to relative timings of events. Thus, Applicants respectfully submit that Kortge *fails* to teach or fairly



suggest a relations subsystem operable to determine temporal relations. Further, Lin and Alden *fail* to overcome the above discussed deficiency of Kortge.

Claims 22 and 23 were amended to incorporate features similar to the newly added subject matter of claim 1, as amended, and are submitted to be allowable for at least the same reasons discussed above with respect to claim 1.

### ***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned.

Prompt and favorable consideration of this Amendment and the allowance of claims 1-5,  
7-14 and 17-23 is respectfully requested.

Respectfully submitted,

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